

Remarks

Claims 1-3, 5-35, and 37-52 are in the application, of which claims 1, 9, 18, 19, 24, 33, 40, and 42 are in independent form. Claims 51-52 are added by this amendment.

In the specification, paragraph [0009] is amended to correct an inadvertent typographical error.

Claim 7 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite because the recitation of "the actuator mechanism" lacks antecedent basis. Applicant responds by changing "actuator mechanism" to --actuator--. Antecedent basis for the recited actuator is found in claim 1.

Claims 1-3, 8, 15-17, 20, 21, 26, 27, 30, 31, 33-35, 39, 43, 44, 46, and 47 stand rejected under 35 U.S.C. § 102(e) as being anticipated by US 2003/0121608 A1 of Chen et al.; claims 1-3, 33, and 34 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,520,001 of Miyamoto et al.; and claims 22 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyamoto et al. The Office action indicated that dependent claims 4-6, 9-14, 18, 19, 24, 25, 28, 29, 32, 36-38, 40-42, 45, and 48-50 recite patentable subject matter and would be allowable if rewritten in independent form. Applicants respond to the Office action, as follows:

Claim 1 is amended to include the limitations of dependent claim 4, which was indicated in the Office action as including allowable subject matter. The limitation of original claim 1 requiring the actuator to be "operably coupled to the first *[sic second]* side of the diaphragm" is deleted in favor of the final paragraph added by amendment, reciting a plunger --operably coupling the actuator to the diaphragm--. Claim 4 is cancelled and claims 5-7 are renumbered to depend from claim 1, rather than claim 4. Claims 2-3, 5-8, 15-17, 20-23, 25-27, and 29-31, as amended, depend from claim 1 and should be allowable therewith.

Claim 9 is rewritten in independent form to include the limitations of original claim 1, except that the phrase of original claim 1 reciting "an actuator operably coupled to the first side of the diaphragm" is changed to --an actuator operably coupled to the second side of the diaphragm--, to correct an inadvertent drafting error in original claim 1. Claims 10-14, 28, and 32 depend from claim 9 and should be allowable therewith.

Claims 18 and 19 are rewritten in independent form to include all of the limitations of original claim 1 (and, in the case of claim 18, the limitations of intervening claim 15), except

that the "heating body" of original claim 1 has been omitted as being unnecessary for patentably distinguishing the subject matter of claims 18 and 19 over the prior art.

Claim 24 is rewritten in independent form to include the limitations of original claim 1, except that the phrase of original claim 1 reciting "an actuator operably coupled to the first [sic second] side of the diaphragm" is changed to --an actuator operably coupled to the diaphragm--. New claims 51 and 52 depend from claim 24 and should be allowable therewith.

Claim 33 is rewritten to include the limitations of dependent claim 36, which was indicated in the Office action as being allowable if rewritten in independent form. Claim 36 is cancelled and claims 37 and 38 are renumbered to depend from claim 33, instead of claim 36. Claims 34, 35, 37-39, 43, 44, 46, and 47, as amended, all depend from claim 33 and should be allowable therewith.

Claims 40 and 42 are rewritten in independent form to include the limitations of original claim 33. Claims 41, 45, 48-50 depend from either claim 40 or 42 and should be allowable therewith.

With respect to claims 15-17 and 23, applicant also respectfully traverses the rejections as being unsupported by the cited references, and reserves the right to challenge the rejections in a continuation application. With respect to claims 15-17, the cited references fail to disclose or suggest the valve claimed in original claim 15, including a plunger having a first end extending within a solenoid coil and a second end operably coupled to the diaphragm, the plunger being driven in response to energizing of the solenoid coil to transition the diaphragm between the open and closed positions.¹ With respect to original claim 23, none of the cited references discloses a diaphragm formed of an elastomeric material and the citation of "official notice" is insufficient to support a *prima facie* case of obviousness based on the suggestion by Miyamoto et al. to use a material that is superior in heat resistance and corrosion resistance. MPEP § 706.02(j). Nevertheless, to expedite issuance of claims in this


¹ The Office action states that the publication of Chen et al. discloses that the diaphragm "may be controlled by a solenoid." However, Chen et al. disclose only a pneumatically actuated valve. The discussion of a solenoid in the publication of Chen et al. is limited to the use of a solenoid valve "to selectively provide the pressurized gas from the pressurized gas supply 150 through a gas line 151." See Chen et al. at para. [0058]. Chen et al. specifically teach away from the use of a solenoid actuated diaphragm. See Chen et al. at para. [0065].

application, applicant has chosen to amend independent claim 1, as described above, thereby overcoming the rejection of claims 15-17 and 23.

Applicant believes the application is in condition for allowance and respectfully requests the same.

Respectfully submitted,

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